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GEORGIA'S REVENUE SHORTFALL REVENUE : AN ANALYSIS OF ITS ROLE, SIZE AND STRUCTURE

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Executive Summary

Year-to-year fluctuations in revenue related to economic recessions and economic growth have a potentially serious effect on the state's budget. Because of a desire to avoid or reduce the need to cut expenditures or raise tax rates, most states have established special reserves that are referred to as budget stabilization or "rainy day" funds. This report explores Georgia's rainy day fund, formally known as the Revenue Shortfall Reserve. The report provides a summary of the operation of the Revenue Shortfall Reserve; an analysis of the size objective and operation of the fund; a comparison with other states, and; suggests possible changes in the structure of the Revenue Shortfall Reserve.

I. Georgia's Reserves

Georgia's rainy day fund was established in 1976, making it one of the first states to adopt such a policy. The goal is to maintain a Revenue Shortfall Reserve equal to 3 percent of the previous year's budget, as measured by actual net revenue collections. The Revenue Shortfall Reserve is funded only if a sufficient surplus exists.

The Revenue Shortfall Reserve is one of several reserve funds that the state maintains. Most of these reserves are restricted and hence not available to finance a budget shortfall. However, there are two reserves in addition to the Revenue Shortfall Reserve that can be used for budget shortfall. The Midyear Adjustment Reserve, established in 1981, is equal to 1 percent of net revenue collections, and is also funded from the state surplus. The other "reserve" is the unrestricted regular Surplus, which is the amount of funds remaining when the above requirements are met.

At the end of FY 1997 (i.e., the beginning of FY 1998), the Revenue Shortfall Reserve was $333.9 million, the Midterm Adjustment Reserve was $111.3 million, and the regular Surplus was $588.9 million. There is little conceptual difference between these three funds. Thus, the sum of the three (which will be referred to as "Total Reserve") is the actual amount available to finance a budget shortfall. The total available funds were thus $1,034.2 million, which is 9.3 percent of FY 1997 net revenues.

Other than the names, there is no essential difference between the Revenue Shortfall Reserve, the Midterm Adjustment Reserve, and the Surplus in terms of how they can be used. However, by designating part of Total Reserves as the Revenue Shortfall Reserve, there may be less political pressure to use that part of Total Reserves to fund additional services or to cut taxes. That is, if the Surplus gets very large, there are likely to be calls to reduce the Surplus by either spending it or by cutting taxes, both of which decrease the amount held for "rainy days."

II. Revenue Shortfall Reserve: Size, Objective, and the Impact of a Recession

The purpose of a rainy day fund is to provide a cushion against large decreases in revenue or revenue growth due to economic recessions. The answer to the fundamental question of how large of a cushion should the state maintain depends upon the state's fiscal objective in holding reserves. One possible objective would be that the state wants to maintain its historic spending pattern in spite of the recession. An alternative objective would be that the state desires to avoid having to cut an adopted budget or raise taxes during the fiscal year. To estimate the Total Reserves necessary to achieve either objective it is instructive to consider the effect of prior recessions.

Assume the state had wanted to maintain the same historic growth in expenditures during the recessionary period 1990 through 1992, i.e., ameliorate the total effect of the recession. If the state had wanted to maintain the same dollar increase in the state budget, the state would have needed a fund balance of $1,936 million, which is 27.8 percent of the state's FY 1989 net revenues adjusted for a 4 percent sales tax rate. If the state had wanted to maintain the historic average annual growth rate, the state would have needed a fund balance of $3,410 million, which is 48.9 percent of the state's FY 1989 net revenues adjusted for a 4 percent sales tax rate.

The above calculations assume that the effect on Georgia of the next recession will have the same magnitude as the 1990-91 recession. Accounting for the randomness of the effect of recessions, we find, for example, that there is a 50 percent probability that a reserve equal to 25 percent of net revenues would be depleted by the recession.

As an alternative objective, suppose that the state only wants to hold sufficient reserves to be able to finance the adopted budget, i.e., avoid any cut in adopted expenditure because of a recession. It is assumed that in subsequent years the state will adopt budgets that reflect the smaller amount of revenues that will be generated due to the recession.

If we assume that actual revenue growth is zero, then financing the adopted budget would have required a reserve of 18.5 percent of FY 1997 net revenues. This level of required Total Reserves is probably an upper bound estimate of what might be necessary to meet the budget for one year since the estimate assumes a large budget increase and no revenue growth.

Rather than considering the largest percentage increase in the budget, consider the actual effect of the recession on state budgeting, i.e., consider the amount that the state had to reduce its budget during the 1990-92 recessionary period. If Total Reserves had to finance the FY 1990 shortfall, then required Total Reserves, expressed as a percentage of FY 1989 net revenues (adjusted to reflect the 4 percent sales tax rate), is 7.0 percent.

Thus, depending on the state's fiscal objective, Total Reserves of between 7.0 percent and 48.9 percent would be required to offset the effects of a recession. Adopting a Revenue Shortfall Reserve at the upper end of that range is overly cautious and unrealistic. However, given the experiences with shortfalls in the FY 1990 and FY 1991 budgets, a Revenue Shortfall Reserve at the low end of the range is unlikely to satisfy the state's fiscal objective. Thus, the state should consider increasing the Revenue Shortfall Reserve from the current 3 percent to between 10 and 15 percent of net revenues.

III. Structure and Operation of Rainy Day Funds

The growth in Georgia's Revenue Shortfall Reserve depends on there being a Surplus at the end of the year. Some (8) states take a more aggressive approach to the development of their rainy day fund. Rather than using the surplus, these states require that a fraction of the state's revenue (or budgeted expenditures) be allocated to the rainy day fund. For example, Indiana requires that funds be transferred to its rainy day fund if the growth of total state personal income is greater than 2 percent, with the percentage of the total general fund revenue transferred equaling the growth rate of personal income less 2 percent.

With a balance of 3 percent of net revenues, Georgia is below the mean of 3.8 percent and the median of 3.3 percent for other states.

Thirty-three states have caps on the size of rainy day funds, usually expressed as a percentage of the budget. Georgia's 3 percent cap is low relative to other states. Some states have adopted very high caps; for example, Michigan has a 25 percent cap, Florida has a 20 percent cap, and Iowa, Oklahoma, Texas, and Virginia have 10 percent caps.

Twenty-three of the 44 states with a rainy day fund allow use of the fund to cover a deficit or if revenues fall below projections. Georgia's Revenue Shortfall Reserve follows this pattern; the funds can be used whenever there is a budget deficit, regardless of the cause.

Some states have structured their rainy day fund to reduce the likelihood that the fund will be used in non-recessionary periods. Seventeen states allow the use of their rainy day fund only through direct appropriation, and in some cases only by a super-majority vote. Four states (Arizona, Maryland, Michigan, and Indiana) use a formula to determine whether their rainy day fund can be used.

IV. Recommendations

Based on this analysis the following are changes to the Revenue Shortfall Reserve that the Georgia General Assembly should consider:

- **Increase the size of the Revenue Shortfall Reserve, perhaps to 10 to 15 percent of net revenues.**
  The current 3 percent is very unlikely to be sufficient to offset a significant portion of the slow down in revenue during the next recession. During the 1990-92 period the state had to reduce budgeted spending, in addition to using the funds in Revenue Shortfall Reserve and in the Surplus, in order to avoid a deficit. To avoid such budgetary difficulties, it is necessary to increase the Reserve. One way to do this would be to transfer much of the current Surplus to the Revenue Shortfall Reserve. The 1990-91 recession seemed to have a greater effect on Georgia than some previous recessions. Thus, setting the Reserve to completely offset the effects of a similar recession, which would require a reserve of 30 to 50 percent, would be overly cautious. The lower reserve (10 to 15 percent) reflects the view that budget growth should be reduced during a recession.

- **Adopt a formula, such as that used in Indiana, for determining the amount of the Revenue Shortfall Reserve that can be drawn down.**
  As currently structured, the Revenue Shortfall Reserve can be used during non-recessionary times by adopting an overly optimistic revenue forecast. One way to prevent such use of the reserve is to adopt a formula under which the reserve can be used only if the state's economy either declines or its growth significantly slows. This change is even more important if the size of the Revenue Shortfall Reserve is increased.

- **Change the funding mechanism to be based on a percentage of net revenue.**
  Rather than using a percentage of the Surplus, a more aggressive approach to the growth of the Reserve is to require that the Reserve be funded from net revenues rather than from the Surplus. Conditions would have to be imposed so that no deposit would be necessary if the economy was in a recession or was growing very slowly.

I. Introduction

Governments maintain cash reserves because during the budget year the timing of receipts do not usually match the desired timing of expenditures. Over a budget year revenue collections vary from month to month (e.g., income tax receipts are generally higher from February through mid April) while the desired expenditure pattern exhibits more uniformity over the year. Rather than allowing the pattern of expenditures to depend on the pattern of revenue receipts, cash reserves are used to maintain the desired expenditure schedule.

Likewise, year-to-year fluctuations in revenue related to economic recessions and economic growth potentially have a similar effect on desired expenditures. In particular, when an economic recession occurs governments are faced with a budget issue. If the recession is unexpected, actual revenues may fall short of the planned expenditure level. This usually necessitates a cut in planned spending. On the other hand, if the recession is anticipated, the government can either budget for the expected lower revenues or increase revenue by raising tax rates.

Because of a desire to avoid or reduce the need to cut expenditures or raise tax rates, most states have established special reserves that are referred to as budget stabilization or "rainy day" funds. Most of these rainy day funds have been established since 1982, as a result of the experience during two economic recessions in the 1980-1982 period. In 1982, twelve states had rainy day funds, while in 1997, forty-four states had such funds, although some states had zero or very small balances in their fund.

This report explores Georgia's rainy day fund, formally known as the Revenue Shortfall Reserve. The report first provides a summary of the operation of the Revenue Shortfall Reserve. Next, the report presents an analysis of the size of Georgia's Revenue Shortfall Reserve. Finally, the report compares the structure of Georgia's Revenue Shortfall Reserve with how such rainy day funds operate in other states and suggests some possible changes in the structure of the Revenue Shortfall Reserve.

II. Georgia's Reserves

Georgia's rainy day fund was established in 1976, making it one of the first states to adopt such a policy. GA Code 45-12-93 (a) states:

> (a) As of June 30 of each fiscal year, the state auditor shall reserve from the state surplus an amount equal to 3 percent of the net revenue collections of such fiscal year, to that extent that such surplus is available therefor. This reserve shall be entitled the revenue shortfall reserve and shall be in lieu of the working reserve for high-income and low-income periods.

In other words, the goal is to maintain a Revenue Shortfall Reserve equal to 3 percent of the previous year's budget, as measured by actual net revenue collections. The Revenue Shortfall Reserve is funded only if a sufficient surplus exists. For example, if the Revenue Shortfall Reserve was less than the 3 percent goal and there was no surplus, the Revenue Shortfall Reserve would not be increased to the 3 percent target.

The legislation is silent on the process for allocating funds from the Revenue Shortfall Reserve. In particular, there are no conditions specified for when the Revenue Shortfall Reserve can be used, and consequently no requirement that specific legislation be passed in order to use these funds. Thus, if during a fiscal year revenue collections fall short of expenditures, the difference will be covered by the regular surplus if available and by the Revenue Shortfall Reserve if the regular surplus is exhausted. There have been two occasions when funds from the Revenue Shortfall Reserve were directly appropriated. In FY 1983 the General Assembly appropriated $5 million from the Revenue Shortfall Reserve, and in FY 1985 the General Assembly appropriated $12.5 million from the Revenue Shortfall Reserve to finance construction of water and sewer projects.

The Revenue Shortfall Reserve is one of several reserve funds that the state maintains. Most of these reserves are restricted and hence not available to finance a budget shortfall. For example, the lottery for education reserve can be used only for specific types of projects as specified in the legislation establishing the lottery. However, there are two reserves in addition to the Revenue Shortfall Reserve that can be used for budget shortfall. The Midyear Adjustment Reserve, established in 1981, is equal to 1 percent of net revenue collections, and is also funded from the state surplus. The allocation of the surplus to the Midterm Adjustment Reserve takes priority over an allocation to the Revenue Shortfall Reserve. The Midterm Adjustment Reserve was established so that during the course of the fiscal year funds would be available to

respond to unexpected events, e.g., changes in school enrollment. However, in practice the Midterm Adjustment Reserve has simply guaranteed that the General Assembly will have funds available during the fiscal year that could be used for the supplemental budget.

The other "reserve" is the unrestricted regular surplus, which is the accumulated difference between actual revenues and actual expenditures, less the amounts set aside in reserves, including the Revenue Shortfall Reserve and the Midterm Adjustment Reserve. For sake of clarity, the term "Budget Surplus" will refer to the surplus for a specific budget year, while "Surplus" will refer to the accumulated Budget Surpluses.[1]

At the end of FY 1997 (i.e., the beginning of FY 1998), the Revenue Shortfall Reserve was $333.9 million, the Midterm Adjustment Reserve was $111.3 million, and the regular Surplus was $588.9 million. There is little practical difference between the Revenue Shortfall Reserve, the Midterm Adjustment Reserve, and the Surplus. Thus, the sum of the three (which will be referred to as "Total Reserve") is the actual amount available to finance a budget shortfall.[2] The total available funds were thus $1,034.2 million, which is 9.3 percent of FY 1997 net revenues (Table 1).

The size of the three reserves (Revenue Shortfall Reserve, Midterm Adjustment Reserve, and Surplus) and their total have varied over time, both in absolute size and as a percentage of net revenues (Table 1). The FY 1997 values are higher than in any of the 21 years considered in Table 1. As a percentage of net revenues, Total Reserves were higher only in FY 1978. There have been two periods when the three reserves were zero or very small, namely FY 1982-84 and FY 1990-92. As a point of reference, the U.S. experienced recent recessions in following periods: first and second quarters of 1980; third quarter of 1981 through fourth quarter of 1982, and; the second quarter of 1990 through the first quarter of 1991. These periods correspond to the following fiscal years: FY 1980, FY 1982-1983, and FY 1990-1991.

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[1]A Budget Surplus will occur, for example, if the state experienced larger than projected revenues or if not all of the appropriated funds are spend.

[2]Of course funds in the Surplus can be directly appropriated. But as noted above, funds from the Revenue Shortfall Reserve can also be directly appropriated.

Table 1
Revenues and Reserves

		Reserves as of June 30				
Fiscal Year	Net Revenue	Revenue Shortfall Reserve	Midterm Adjustment	Surplus	Total	Total/ Net Revenue
1977	$1,925,775,139	$57,773,254		$118,619,171	$176,392,425	9.2%
1978	2,218,055,593	66,541,667		160,956,383	227,498,050	10.3%
1979	2,507,484,726	75,224,541		133,828,294	209,052,835	8.3%
1980	2,809,997,680	84,299,930		158,675,993	242,975,923	8.6%
1981	3,109,631,979	93,288,959		87,254,220	180,543,179	5.8%
1982	3,378,009,362	17,439,162	$33,780,093	0	51,219,255	1.5%
1983	3,572,370,035	0	22,413,128	0	22,413,128	0.6%
1984	4,010,602,173	38,240,758	40,106,021	0	78,346,779	2.0%
1985	4,607,813,413	138,234,402	46,078,134	197,279,886	381,592,422	8.3%
1986	5,020,725,086	150,621,753	50,207,250	34,784,478	235,613,481	4.7%
1987	5,421,318,773	162,639,563	54,213,187	81,455,890	298,308,640	5.5%
1988	5,890,910,203	176,727,306	58,909,019	85,282,821	320,919,146	5.4%
1989	6,467,686,421	194,030,593	64,676,864	78,130,438	336,837,895	5.2%
1990	7,196,336,132	0	55,163,169	0	55,163,169	0.8%
1991	7,258,196,887	0	0	0	0	0.0%
1992	7,371,963,588	0	61,346,055	0	61,346,055	0.8%
1993	8,266,576,008	122,640,698	83,463,769	37,102,806	243,207,273	2.9%
1994	8,906,515,809	267,195,474	89,065,158	28,192,147	384,452,779	4.3%
1995	9,625,658,475	288,769,754	96,256,584	94,472,679	479,499,017	5.0%
1996	10,446,184,459	313,385,534	104,461,844	363,354,920	781,202,298	7.5%
1997	11,131,393,549	333,941,806	111,313,935	588,907,843	1,034,163,584	9.3%

Sources: *Budget Report*, Office of Planning and Budgeting, annual; *Report of the State Auditor*, Georgia Department of Audits, annual.

Other than the names, there is no essential difference between the Revenue Shortfall Reserve, the Midterm Adjustment Reserve, and the Surplus in terms of how they can be used. However, by designating part of Total Reserves as the Revenue Shortfall Reserve, there may be less political pressure to use that part of Total Reserves to fund additional services or to cut taxes. That is, if the Surplus gets very large, there are likely to be calls to reduce the Surplus by either spending it or by cutting taxes, both of which decrease the amount held for "rainy days."

III. Revenue Shortfall Reserve: Size, Objective, and the Impact of a Recession

The conventional wisdom among budget officers is that states should hold unrestricted balances equal to 5 percent of the state's budget. For example, the National Conference of State Legislatures Fiscal Affairs and Oversight Committee recommends that states hold balances of 5 percent of the state budget (Yondorf 1983). However, Gold (1983) has argued that the appropriate balance depends upon the volatility of the state's revenues and the desirability of having stable tax rates and stable expenditure growth. A 5 percent reserve makes sense if its purpose is to even out year-to-year fluctuations in revenue (Navin and Navin 1997). For example, if revenue growth is 8 percent one year and 6 percent in another, reserves can be established in higher growth years and spent in the lower growth years in order to maintain a constant 7 percent growth in expenditures. The purpose of a rainy day fund, however, is to provide a cushion against large decreases in revenue or revenue growth due to economic recessions, not just year-to-year variations in growth of revenues.

Figure 1 presents net revenues, adjusted for the change in the sales tax rate, for the state of Georgia for the period 1977-1996, while Figure 2 presents the same data but in real terms, i.e., adjusted for inflation. (In 1989, the state increased the sales tax rate to 4 percent. In order to separate the effect of the recession from the sales tax increase, revenue figures for pre-1989 years were increased to reflect a 4 percent sales tax rate. Other tax changes were ignored.)

Over the last several years the state has experienced substantial growth (Figure 1); however, it has not been immune to recessions. In real terms state revenue did not change much in the late 1970's

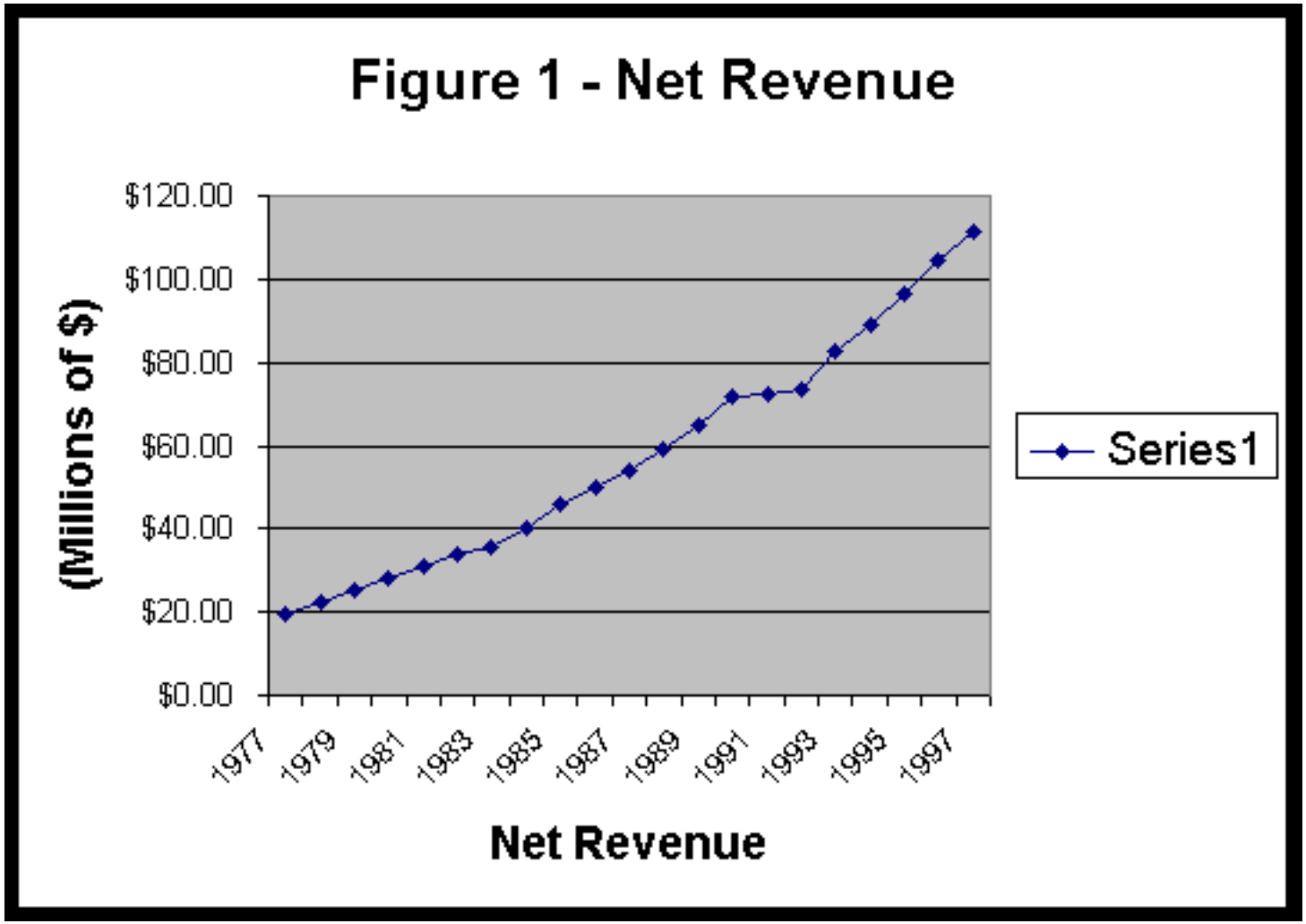
Figure 1 - Net Revenue
(Millions of $)
$120.00
$100.00
$80.00
$60.00
$40.00
$20.00
$0.00
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
Net Revenue
Series1

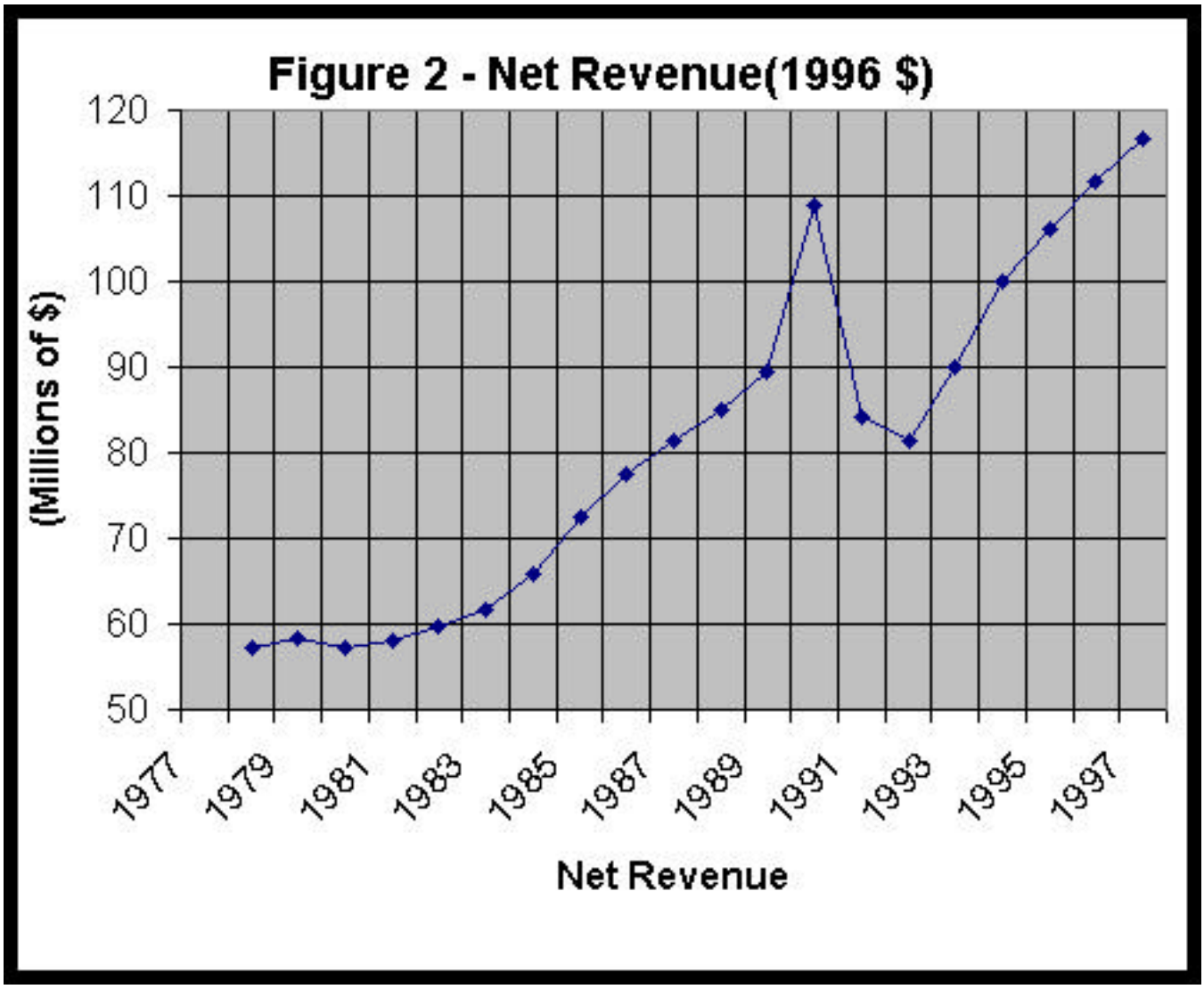
Figure 2 - Net Revenue(1996 $)
(Millions of $)
120
110
100
90
80
70
60
50
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
Net Revenue

and early 1980's, although revenue did decline in real terms in FY 1980 (Figure 2). In the early 1990's revenues were flat (Figure 1), while in real terms revenues fell in FY 1990 and FY 1991 (Figure 2).

The fundamental question is, How large of a cushion should the state maintain? The answer to that question depends upon the state's fiscal objective in holding reserves. One possible objective would be that the state wants to maintain its historic spending pattern in spite of the recession. An alternative objective would be that the state desires to avoid having to cut an adopted budget or raise taxes during the fiscal year. The first objective is concerned with the budgets during the entire recessionary period, while the second objective is concerned only with the adopted budget. To estimate the Total Reserves necessary to achieve either objective it is instructive to consider the effect of prior recessions.

A. Objective One

Consider first the objective of ameliorating the total effect of a recession. Sobel and Holcombe (1996) investigated the effect of the 1990-1991 recession on state budgets. They show that states increased taxes and drew down both rainy day fund and other fund balances during that recession, with tax increases and reduction in fund balances continuing through FY 1992. Sobel and Holcombe note that of the 29 states with positive balances in their rainy day funds in 1989, 12 states had essentially depleted their balance by the end of FY 1991.

Of particular interest are the calculations made by Sobel and Holcombe (1996) of the fund balances that would have been necessary in 1988 in order to completely eliminate fiscal stress over the next four years. In other words, they calculate how big of a rainy day fund plus other fund balances (i.e., Surplus) would have been necessary to allow states to increase expenditures by their historic amounts while avoiding any increase in taxes. For Georgia they calculate that a rainy day fund of $3,523.6 million would have been required, an amount equal to 38.68 percent of the 1988 budget. Table 2 presents the distribution of the required percentages for all states. As is evident, Georgia is at the upper end of the distribution.

Table 2

Fully-Funded Surplus for 1990-91 Recession

Percentage of 1988 Budget Required to Offset Effects of Recession	Number of States
less than 10.0%	7
10.0% to 19.9%	13
20.0% to 29.9%	8
30.0% to 39.9%	10
40.0% to 49.9%	5
50.0% to 59.9%	1
60.0% or more	6
Source: Sobel and Holcombe (1996)	

We performed similar calculations, but we considered both the average annual dollar increase in net revenues and the average annual growth rate of net revenues for the period 1982-1989. The average annual increase in net revenue was $474.6 million, while the average annual growth rate was 9.69 percent.

Assume the state had wanted to maintain the same historic growth during the recessionary period 1990 through 1992, i.e., ameliorate the total effect of the recession. In order to maintain the historic average annual dollar increase in the state budget, the state would have needed a fund balance of $1,936 million, which is 27.8 percent of the state's FY 1989 net revenues adjusted for a 4 percent sales tax rate. If the state had wanted to maintain the historic average annual growth rate, the state would have needed a fund balance of $3,410 million, which is 48.9 percent of the state's FY 1989 net revenues adjusted for a 4 percent sales tax rate. These amounts are substantially larger than the $336.8 million the state had on hand at the end of FY 1989, an amount equal to 5.2 percent of FY 1989 net revenue (Table 1) and 4.8 percent of FY 1989 net revenues adjusted for the 4 percent sales tax rate.

At the end of FY 1997, the state had a Revenue Shortfall Reserve fund of $333.9 million (3.0 percent of the net revenues), $111.3 million (1.0 percent of net revenues) in the Midyear Adjustment fund, and $588.9 million (5.3 percent of net revenues) in Surplus. Thus, altogether the state had Total Reserves of $1,034.1 million going into the FY 1998 budget year, an amount equal to 9.3 percent of the FY 1997 budget.

The available Total Reserves are substantially less than the amount that would be necessary to maintain the historic spending pattern if Georgia were to experience a recession similar to the 1990-91 recession.

Based on the experience during the 1990-92 period, Total Reserves equal to 3 percent of the budget are too small to maintain historic expenditure growth in the face of a recession such as Georgia experienced in 1990-92. However, it is very likely that the state would not want to maintain the historic growth in expenditures in the face of a recession. Table 3 shows the required Total Reserves, as a percentage of net reserves, for alternative levels of budget growth during the next recession, assuming that the recession is similar to the one experienced in 1990-91. For example, suppose that in the next recession the state wants to be able to increase expenditures by half of the historic (1982-89) growth rate, i.e., by 4.9 percent per year, without increasing taxes. This implies that the state would need a Total Reserves going into the recession of 32.7 percent of net revenues.

Table 3

Required Reserves

	Required Reserve as a Percentage of Budget	
Desired Percentage of Historic Growth	Dollar Growth	Growth Rate
100%	27.8%	48.9%
75%	17.5%	32.7%
50%	13.9%	16.9%

The above calculations assume that the effect on Georgia of the next recession will have the same magnitude as the 1990-91 recession. However, each recession effects states differently; in one recession states in the South may be hurt more than other states, while in an other recession Western states may be more affected. Thus, we need to account for the randomness of the effect of recessions. To do that, assume that the effect of the recession on any state is random and that the distribution of effects is given by Table 2. Using Table 2 we calculated the probability of experiencing a recession of various severity. Table 4 shows for Georgia the probability that Total Reserves of various amounts, expressed as a percentage of net

revenues, will be depleted by the recession.[3] The calculations, for example, suggest that there is a 50 percent probability that a reserve equal to 25 percent of net revenues will be depleted by the recession.

Table 4

Probability that Given Reserve Will Not Offset Recession

Reserve as a Percentage of Budget	Probability
5%	95.8%
10%	85.4%
15%	70.8%
20%	58.3%
25%	50.0%
30%	41.7%
35%	33.3%
40%	20.8%
45%	16.7%
50%	10.4%
55%	8.3%

B. Objective Two.

The alternative to considering the total effect of the recession on historic growth is to consider the effect of the recession on just the adopted budget. Suppose that the state only wants to hold sufficient reserves to be able to finance the adopted budget, i.e., avoid any cut in adopted expenditure because of a recession. It is assumed that in subsequent years the state will adopt budgets that reflect the smaller amount of revenues that will be generated due to the recession.

[3]An important assumption underlying the use of the data from Sobel and Holcombe (1996), i.e., Table 2, is that states with high historic growth rates did not necessarily experience relatively larger or smaller negative effects from the recession. For example, if every state experienced zero growth in revenue, then a state like Georgia, which had high historic growth rates, would require a much larger reserve in order to maintain expenditure growth at historic levels than a state with a historic growth rate of one percent.

To determine the necessary reserve balance, assume that the increase in the adopted budget equaled the largest annual percentage increase in the budget between 1982 and 1989, i.e., 18.5 percent. If we assume that actual revenue growth is zero, then to finance the adopted budget would have required a reserve of 18.5 percent of FY 1997 net revenues. This level of required Total Reserves is probably an upper bound estimate of what might be necessary to meet the budget for one year since the estimate assumes a large budget increase and no revenue growth. These events are unlikely to occur in the same year since revenue forecasts would have reflected the slowing down of the economy prior to the recession.

Rather than considering the largest percentage increase in the budget, consider the actual effect of the recession on state budgeting, i.e., consider the amount that the state had to reduce its budget during the 1990-92 recessionary period.[4] In FY 1991 the difference between the original budgeted expenditures and actual expenditures was $449 million. In addition, the state used $55 million of Total Reserves to finance the adopted budget. Thus, the Total Reserves that would have been required to finance the FY 1991 adopted budget was 7.0 percent of FY 1990 net revenues. However, the state used most of its Total Reserve to finance the FY 1990 budget. If Total Reserves had to finance both the FY 1990 and FY 1991 shortfall, then required Total Reserves, expressed as a percentage of FY 1989 net revenues (adjusted to reflect the 4 percent sales tax rate), is 12.9 percent.

Table 5 summarizes the required size of Total Reserves for the various objectives. Thus, depending on the state's fiscal objective, Total Reserves of between 7.0 percent and 48.9 percent would be required to offset the effects of a recession. Adopting a Revenue Shortfall Reserve at the upper end of that range is overly cautious and unrealistic. However, given the experiences with shortfalls in the FY 1990 and FY 1991 budgets, a Revenue Shortfall Reserve at the low end of the range is unlikely to satisfy the state's fiscal objective. Thus, the state should consider increasing the Revenue Shortfall Reserve from the current 3 percent to between 10 and 15 percent of net revenues.

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[4]For a discussion of Georgia's budget response to the recession see Lauth (1994).

Table 5 Relationship Between Fiscal Objectives and Required Reserve	
Objective	Required Reserves as a % of Net Revenues
Maintain historic dollar increase during recession	27.8
Maintain historic percentage increase during recession	48.7
50 percent probability that the effect of the recession will not deplete reserve	25.0
Allow largest annual percentage increase in budget with no revenue growth	18.5
Finance FY 1991 adopted budget	7.0
Finance both FY 1991 and FY 1992 budgets	12.9

IV. Structure and Operation of Rainy Day Funds

The growth in Georgia's Revenue Shortfall Reserve depends on there being a Surplus at the end of the year. (Using the Surplus or Budget Surplus is the approach taken to funding a rainy day fund by half of the 44 states that report having a such a fund.) Since Georgia has had a Surplus in most non-recessionary years, the Revenue Shortfall Reserve has been fully funded in most non-recessionary years. The size of the Surpluses during the past few years has been quite large.

Some (8) states take a more aggressive approach to the development of their rainy day fund. Rather than using the surplus, these states require that a fraction of the state's revenue (or budgeted expenditures) be allocated to the rainy day fund. For example, Indiana requires that funds be transferred to its rainy day fund if the growth of total state personal income is greater than 2 percent, with the percentage of the total general fund revenue transferred equaling the growth rate of personal income less 2 percent.

Other states (15) fund the rainy day fund through direct appropriations. This allows greater discretion on the part of the legislature, but also means that the rainy day fund must compete with other demands for state funds and hence may go unfunded. In fact, those states that employ an appropriation approach to funding rainy day funds tend to have smaller, or zero, balances relative to the size of their budgets.

Table 6 presents a distribution of the size of rainy day funds expressed as a percentage of the FY 1998 budget for the 44 states with a rainy day fund. With a balance of 3 percent, Georgia is below the mean of 3.8 percent and the median of 3.3 percent.[5]

Table 6
Current Rainy Day Fund Balances

Balances as a Percentage of FY 1998 Budget	Number of States
less than 1/0%	7
1.0% to 1.9%	3
2.0% to 2.9%	9
3.0% to 3.9%	7
4.0% to 4.9%	5
5.0% to 5.9%	5
6.0% to 6.9%	2
7.0% to 7.9%	2
8.0% and greater	4
No Rainy Day Fund	6

Source: Unpublished information from National Conference of State Legislatures

Thirty-three states have caps on the size of rainy day funds, usually expressed as a percentage of the budget (Table 7). States with no cap use direct appropriations to fund the rainy day fund. Georgia's 3 percent cap is low relative to other states. Some states have adopted very high caps; for example, Michigan has a 25 percent cap, Florida has a 20 percent cap, and Iowa, Oklahoma, Texas, and Virginia have 10 percent caps.

Twenty-three of the 44 states with a rainy day fund allow use of the fund to cover a deficit or if revenues fall below projections. Georgia's Revenue Shortfall Reserve follows this pattern; the funds can be used whenever there is a budget deficit, regardless of the cause.

[5]These exclude Alaska, which had a balance of 126.2 percent of its budget.

Table 7 Cap on Size of Rainy Day Fund	
Cap	Number of States
2%	1
3%	4
4%	3
5%	13
7%	1
7.5%	1
8%	1
10%	4
20%	1
25%	1
Dollar Cap	3
Source: Unpublished information from National Conference of State Legislatures	

As presently constituted, Georgia's Revenue Shortfall Reserve can be used to finance annual expenditures beyond the annual revenues. Suppose the state purposely adopts a revenue projection that is overly optimistic, i.e., a budget is adopted that cannot be financed by revenues generated during the fiscal year. Thus, at the end of the fiscal year, the state will have to draw down its Surplus, and possibly the Revenue Shortfall Reserve, to finance the current year budget deficit. In this situation, actual revenues fall short of projected revenues, not because of a recession, but because of an overly optimistic forecast. Given this possibility, there is no essential difference in how the funds in the Revenue Shortfall Reserve and in the Surplus can be used.

It has been suggested that in Georgia such budget practices have been used in the past, particularly at the end of a governor's term of office. Note that the Revenue Shortfall Reserve balance was zero in FY 1983 and FY 1991, which coincide with the last budget year of an incumbent governor. However, these years also correspond to recession years; the U.S. experienced recessions in FY 1980, FY 1982-1983, and FY 1990-1991.

Some states have structured their rainy day fund to reduce the likelihood that the fund will be used in non-recessionary periods. Seventeen states allow the use of their rainy day fund only through direct appropriation, and in some cases only by a super-majority vote. For example, Texas requires a direct appropriation with 60 percent of the legislature voting to approve it. Iowa and Utah require a 2/3rds approval vote. Alaska requires a Declaration of Emergency approved by 75 percent of the legislature before its rainy day fund can be used.

The argument is that the uncertainty that a legislature will approve an appropriation from the rainy day fund reduces the likelihood that an overly optimistic revenue forecast will be adopted. The larger the majority vote required, the greater the uncertainty that use of the rainy day fund will be approved.

Four states (Arizona, Maryland, Michigan, and Indiana) use a formula to determine whether their rainy day fund can be used. Maryland's rainy day fund can be used only if the state unemployment rate is greater than 6.5 percent and is greater than in the previous year. In Indiana, the rainy day fund can be used only if the state experiences an economic decline as measured by changes in total state personal income. In particular, the fund can be used only if aggregate personal income in the previous year fell by more than two percent, with the amount that can be used equal to the difference between the actual decline in personal income and two percent, times the previous year's general fund revenue.

V. Recommendations

Based on this analysis the following are changes to the Revenue Shortfall Reserve that the Georgia General Assembly should consider:

- **Increase the size of the Revenue Shortfall Reserve, perhaps to 10 to 15 percent of net revenues.**
  The reason for suggesting an increase is that the current 3 percent is very unlikely to be sufficient to offset a significant portion of the slow down in revenue during the next recession. During the 1990-92 period the state had to reduce budgeted spending, in addition to using the funds in Revenue Shortfall Reserve and in the Surplus, in order to avoid a deficit. To avoid such budgetary difficulties, it is necessary to increase the Reserve. Increasing the Revenue Shortfall Reserve means that the Surplus can be small. Thus, one way to begin to increase the Revenue Shortfall Reserve is to transfer much of the current Surplus to the Revenue Shortfall Reserve. The 1990-91 recession seemed to have a greater effect on Georgia than some previous recessions. Thus, setting the Reserve to completely offset the effects of a similar recession, which would require a reserve of 30 to 50 percent, would be overly cautious. The lower reserve (10 to 15 percent) reflects the view that budget growth should be reduced during a recession.

- **Adopt a formula, such as that used in Indiana, for determining the amount of the Revenue Shortfall Reserve that can be drawn down.**
  As currently structured, the Revenue Shortfall Reserve can be used during non-recessionary times by adopting an overly optimistic revenue forecast. One way to prevent such use of the reserve is to adopt a formula under which the reserve can be used only if the state's economy either declines or its growth significantly slows. This change is even more important if the size of the Revenue Shortfall Reserve is increased.

- **Change the funding mechanism to be based on a percentage of net revenue.**
  Rather than using a percentage of the Surplus, a more aggressive approach to the growth of the Reserve is to require that the Reserve be funded from net revenues rather than from the Surplus. Conditions would have to be imposed so that no deposit would be necessary if the economy was in a recession or was growing very slowly.

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